REMARKS

This is in response to the Office Action mailed November 20, 2008. All rejections are respectfully traversed. Claims 1-15 are pending in the application.

Claims 1, 2, 5 and 7 are amended herein for clarification. Applicant respectfully submits that no new matter has been added by the present amendment. Support for the amended claims can be found in the specification, for example, in paragraph [009], line 9.

Summary of Telephonic Interview

Applicant gratefully thanks Examiner Steven Cernock and Primary Examiner Din Nguyen for conducting a telephonic interview with Applicant's attorney, Joseph P. Quinn, on April 14, 2009.

After discussing the double patenting rejections, Applicant's attorney, Joseph P. Quinn, and Examiner Cernock agreed that Fig. 8 of U.S. Patent No. 6755259 does not provide sufficient information to "garner from that, that the same water jet could be created."

The Examiner still believes that, in view of U.S. Patent Nos. 2224010 and 5301756, the curtain-like shape limitation should be clarified.

It was agreed that amending the independent claims as follows would more clearly distinguish the cited references (especially the '010 patent). ... "directing a plurality of single jets expelled from the orifices so that they intersect one another to form a single uniform jet having a flat curtain-like shape."

Support for this new claim language can be found in the specification at paragraph [009], line 12, for example, and in the figures.

Double patenting

The Examiner rejected claims 1-13 on the grounds of nonstatutory obviousness-type double patenting over claims 1 – 23 of U.S. Patent No. 6,755,259 to Peltola et al. (hereinafter "Peltola") in view of U.S. Patent No. 2,224,101 to Barber (hereinafter "Barber").

The Examiner erroneously asserted that "Barber et al. teaches a piercing nozzle having a plurality of orifices (Fig. 3, #60) that form a single uniform jet having a flat curtain-like shape (Fig. 5)." Office Action, page 3, lines 9 – 10. Applicant respectfully submits that, contrary to the Examiner's characterization, the plurality of orifices that are shown in Fig. 3 of Barber do not and can not form a single uniform jet, of any kind, let alone a jet having a flat curtain-like shape as particularly claimed in each of the rejected claims. Rather, Barber recites

> "The bores, as illustrated in Figure 3, are preferably six in number and include a pair of diametrical bores 60 and 62 extending in opposite directions from the central axis of the nozzle box. One either side of these bores are pairs of bores 64 and 66 on one side and 68 and 70 on the other side. These bores are nearly parallel to the bores 60, 62 but **diverge** slightly therefrom as shown, so as to distribute water discharged through the nozzle box in the manner indicated in Figure 5, the purpose of such distribution being **to reach simultaneously practically all portions of a narrow compartment** such as is usually found between floor joists or the studding in a house interior wall. It is found, for example, that **a divergence of 6 [degrees] between the bores 64 and 68 and the central bore 60 will result in the streams from the bores 64 and 68 impinging on the sides of floor joists which are 18 inches apart a distance of 7 feet from the nozzle**" Col. 4, lines 23 – 43. Emphasis added.

Figure 5 of Barber clearly shows that the diverging emissions from Barber's nozzle do not join to form a single stream, but instead are constrained only by the interior surface of the space which they are designed to fill. Applicant submits that the diverging bores described in Barber to provide streams which reach practically all portions of a narrow compartment, are in stark contrast with Applicant's claimed plurality of orifices.

It is not clear how the Examiner could assert that Barber teaches or suggests a plurality of orifices that form a single unified jet. Even if the diverging bores 64, 66, 68 and 70 are were not present, the remaining bores 60 and 62 would simply provide opposing streams which do not alone or together provide a flat unified jet.

In response to Applicant's previous arguments, the Examiner erroneously refers to Figure 6 of Barber. However, Barber does not include a Figure 6. Further, the Examiner erroneously asserted that Barber discloses a jet spraying forward of the piercing tool. Applicant respectfully

submits that, contrary to the Examiner's characterization, Figure 1 of Barber shows that there is a blind piercing head (10) in the foremost end of a tool (2), the head (10) having no orifices through which water could be sprayed in forward direction. There are orifices only in a nozzle box (12), which orifices are directed sidewardly in opposite directions, as it is shown in Figures 2, 3 and 5. In Barber no single flat curtain like jet is formed.

The Examiner asserted that the phrase "a single uniform jet having a flat curtain-like shape" has more than one connotation. Office Action, page 10, lines 17 – 20. According to the Examiner, one or a plurality of nozzle holes may have the capability to generate such a jet. Applicant respectfully submits that it is impossible that only one nozzle opening could manage to form the claimed jet. Further, Applicant submits that a plurality of nozzle openings can form the flat curtain-shaped jet only when positioned in a certain manner relative to each other. When openings are directed into several different directions, such as in Peltola, or in opposite two side directions such as in Barber, no such jets can be formed.

Further, independent method claim 1 recites " directing a plurality of single jets expelled from the orifices so that they form a single uniform jet having a flat curtain-like shape". Emphasis added. Independent claims 5 and 7 require "the orifices in the nozzle are arranged to pass via substantially the same imaginary plane so that the fire extinguishing medium fed through the orifices is arranged to form a single uniform jet having a flat curtain-like shape". Therefore, even if a single orifice could provide some connotation of a flat curtain-like shape, such a single orifice would not teach or suggest Applicant's claimed plurality of single jets which form a single uniform jet.

To further clarify the claimed subject matter, each of the claims are amended herein to require that the plurality of single jets intersect one another. Applicant respectfully submits that the amended claims more clearly distinguish any combination of Barber and Peltola.

Since no combination of Barber and Peltola teaches or suggests each and every element of any of the rejected claims, Applicant respectfully submits that the nonstatutory obviousness type double patenting rejections of claims 1 -13 are improper and should be withdrawn. Reconsideration is respectfully requested.

Rejections Under 35 U.S.C. §102

The Examiner rejected claims 1-6, 14 and 15 under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 5,301,756 to Relyea et al. (hereinafter "Relyea").

Regarding claims 1 and 5, the Examiner erroneously asserted that Relyea discloses "a nozzle (Fig. 15, 200) provided in the piercing tool, spraying the fire extinguishing medium to the side of the second surface of the shell through a plurality of orifices provided in the nozzle (column 10, line 42), and directing a plurality of single jets expelled from the orifices so that they form a single uniform jet having a flat curtain-like shape." Office action, page 4, lines 5 – 9.

Applicant respectfully submits that, contrary to the Examiner's characterization, the piercing nozzle (Fig. 15, 192) can in no way form a single flat jet as claimed in claim 1 because it includes a plurality of orifices (200) which are directed in several directions. Further, Applicant submits that by using the piercing nozzle (192) of Relyea it is not possible to confine a seat of fire, as it is claimed in claim 2 of the present application.

With regard to claim 2, the Examiner refers to column 9 lines 19 - 23 and 33 – 36 of Relyea, which describes conventional water spray nozzle (56) and not to a piercing nozzle (192). Claim 2 is amended herein to clarify that the claimed jet is provided by said nozzle provided in the piercing tool. Applicant respectfully submits that Relyea's disclosure of a separate conventional water spray nozzle (56) apart from a piercing nozzle (192) does not teach or suggest anything Applicant's claimed "nozzle provided in the piercing tool". The structure of a conventional spray nozzle (56) is completely different and unrelated to the structure of a the piercing nozzle (192) as can be noted when comparing Figures 8 and 15 of Relyea. For example, Relyea describes that the spray pattern of nozzle 56 is influenced by means of electric motors (166, 168). Col. 9, lines 24 – 33. In the piercing nozzle (192) there are no adjustable elements that could be moved by any electric motors for influencing to the spray jet.

Regarding claims 3, 4 and 6, the Examiner asserted that "Relyea et al. shows turning the nozzle and the piercing tool around the longitudinal axis of the piercing tool in order to turn the curtain-like jet (column 1, lines 55-59). Applicant respectfully submits that claims 3 and 4 do

not recite "turning the nozzle and piercing tool around the longitudinal axis of the piercing tool." Rather claim 3 recites "turning the nozzle around the longitudinal axis of the piercing tool" and claim 4 recites "turning the piercing tool around its longitudinal axis." Claim 6 recites "means are provided in connection with the piercing tool for turning the curtain-like jet expelled from the nozzle with respect to the longitudinal axis of the piercing tool."

Contrary to the Examiner's characterization, the cited portion of Relyea recites. "It would also be advantageous to have a nozzle assembly on the outer end of the upper boom which not only could be pivoted in the vertical plane but could also be rotated in a plane perpendicular to the vertical plane." Applicant respectfully submits that this general description of what would be advantageous in a discussion of background technologies does not teach or suggest a structure or method for providing such an advantage. More particularly, Applicant submits that nothing in Relyea teaches or suggests "turning the nozzle around the longitudinal axis of the piercing tool in order to turn the curtain-like jet" as claimed in claim 3, or "turning the piercing tool around its longitudinal axis in order to turn the curtain-like jet" as claimed in claim 4, wherein plurality of orifices are provided in the nozzle provided in the piercing tool to provide the curtain like jet as required in each of claim 3 and claim 4. Further, nothing in Relyea discloses "means are provided in connection with the piercing tool for turning the curtain-like jet expelled from the nozzle with respect to the longitudinal axis of the piercing tool" as claimed in claim 6.

Applicant also respectfully submits that the threaded portion of piercing nozzle described in Relyea does not provide structure for turning the nozzle or piercing tool to turn a curtain-like jet. Rather, the piercing nozzle (192) is threadedly attached to the body portion with threads. The nozzle (192) is attached by means of threaded fastening and the threads are not for turning the nozzle during its use. Rather, the nozzle is turned only when being assembled or possibly disassembled.

For at least the reason that Relyea does not disclose each and every element of claim 1 or 5 as set forth above, Applicant respectfully submits that the rejections of claims 1-6, 14 and 15 under 35 U.S.C. §102(e) are improper and should be withdrawn. Reconsideration is respectfully requested.

Rejections Under 35 U.S.C. §103

The Examiner rejected claims 7-10 under 35 U.S.C. §103 as being unpatentable over Relyea et al. (U.S. Patent No. 5,301,756) in view of Tsuji et al. (U.S. Patent No. 3,913,845).

Claim 7 which is representative in part of each of the rejected claims, recites:

> 7. A nozzle of a piercing tool for spraying a fire extinguishing medium, the nozzle being an elongated piece having a front end and a rear end and the nozzle comprising:
>
> fastening means at the rear end of the nozzle for fastening the nozzle to the piercing tool,
>
> at least one feed channel for feeding a fire extinguishing medium to the nozzle,
>
> a plurality of orifices extending from the feed channel to an outer surface of the nozzle, the orifices being directed obliquely forwards such that the farther away from the front end of the nozzle a single orifice resides, the larger an acute angle between the middle axis of the orifice and the middle axis of the nozzle
>
> and wherein the longitudinal cross section of the nozzle, the orifices are arranged to pass via substantially the same imaginary plane so that the fire extinguishing medium fed through the orifices forms a plurality of single jets which intersect one another to form a single uniform jet having a flat curtain-like shape.

The Examiner admitted that "Relyea et al. does not teach the orifices being directed obliquely forward such that the farther away from the front end of the nozzle a single orifice resides, the larger an acute angle between the middle axis of the orifice and the middle axis of the nozzle, and wherein the longitudinal cross section of the nozzle, the orifices are arranged to pass via substantially the same imaginary plane so that the fire extinguishing medium fed through the orifices is arranged to form a single uniform jet having a flat curtain like shape..." Office Action, page 6, lines 14 – 20. However, the Examiner asserted that "...Tsuji et al. does teach the specific orifice pattern (Fig. 4, 6a, 6b, 6c, 6d.).

Applicant respectfully submits that nothing in either Relyea or Tsuji alone or when combined teaches or suggests an arrangement of orifices that form a single uniform jet having a

flat curtain-like shape. Rather, to the contrary, Tsuji discloses an arrangement of orifices that are intended to prevent interference of materials ejected through the orifices so that a large number of independent small flames would be formed. See Abstract, lines 7 – 10, for example. Because Tsuji discloses orifices designed to avoid interference with each other so as to create a large number of independent flames, Tsuji teaches away from the claimed arrangement in which the extinguishing medium is fed through the orifices to form a single uniform jet.

Applicant also respectfully submits that persons skilled in the art would not be motivated to combine Tsuji which avoids interference between jets, with Relyea or any other reference, in order develop a nozzle which forms a single uniform jet as particularly claimed. Furthermore, persons knowledgeable in the field of nozzle design for firefighting apparatus would likely not look to Tsuji's non-analogous field of fuel injection nozzles in order to design orifices for dispersing fire extinguishing material.

The Examiner rejected claim 11 under 35 U.S.C. §103 over Relyea in view of Tsuji and further in view of U.S. Patent No. 2,246,797 to Geddes et al. (hereinafter "Geddes"). The Examiner erroneously asserted that Tsuji teaches a "nozzle is arranged to form a uniform, curtain-like jet extending to the sides and to the front of the nozzle." Applicant respectfully submits, for at least the reasons set forth above, that contrary to the Examiner's characterization, Tsuji does not teach or suggest orifices arranged to form a curtain like jet, or more particularly, "orifices are arranged to pass via substantially the same imaginary plane so that the fire extinguishing medium fed through the orifices is arranged to form a single uniform jet having a flat curtain-like shape" as claimed.

The Examiner admitted that Tsuji does not teach that the outer surface of the nozzle is provided with at least one longitudinal groove at the first line of orifices and at least one longitudinal groove at the second line of orifices. Office Action, page 8, lines 10 – 12. However, the Examiner asserted that "Geddes et al. does teach that the outer surface of the nozzle is provided with at least one longitudinal groove at the first line of orifices and at least one longitudinal groove at the second line of orifices (Figs 2&4)." Office Action, page 8, lines 13 – 15.

Applicant respectfully submits that Geddes does not teach a surface groove on a nozzle, rather the groove shown in Geddes (42) is a discharge port which extends to a the center chamber or bore 40 without any cooperation or interaction with separate orifices. Therefore the groove 42 of Geddes is not analogous to Applicant's claimed "at least one longitudinal groove at the first line of orifices and at least one longitudinal groove at the second line of orifices."

Applicant also submits that it would not be obvious to combine the teaching of Geddes with Tsuji, since Tsuji teaches to form openings that guarantee that the independent jets will not interference with each other. Furthermore the combination of Relyea, Tsuji and Geddes would still not include the feature of a single uniform flat curtain-like jet as particularly claimed.

The Examiner rejected claims 12 – 13 under 35 U.S.C. §103 over Relyea in view of Tsuji and Geddes and further in view of U.S. Patent No. 4,435,891 to Nicholson et al. (hereinafter "Nicholson").

The Examiner admitted that neither Tsuji nor Geddes teaches at least one longitudinal groove at the second line of orifices. Office Action, page 9, lines 8 – 9. However, the Examiner asserted that "Nicholson et al. does teach the at least one longitudinal groove at the second line of orifices (Figs 1 & 2, 12 & 18)." Office Action, page 9, lines 9 – 10. Applicant respectfully submits that, contrary to the Examiner's characterization, Nicholson teaches that the grooves are formed so that they are only directed in one direction. See, Fig. 8 and col. 3 lines 14 – 19. This teaching is opposite to the teaching of Relyea, wherein nozzle openings are directed in several different directions. See Figs. 15 - 18 of Relyea. Further, the pipe of Nicholson is not suitable for fire fighting wherefore a person skilled in the art would not consider it.

If for some reason the teaching of Nicholson were combined with the teaching of Relyea, the end result would be a piercing tool having a nozzle as taught in Relyea and wherein the nozzle openings would have the shape as taught in Nicholson. However, in the combined structure the nozzle openings were directed to several directions as it is clearly shown in Relyea. Applicant respectfully submits that no combination of Relyea, Tsuji and Geddes and/or Nicholson includes the feature of a single uniform flat curtain-like jet as particularly claimed.

For at least the reason that no combination of Relyea, Tsuji and Geddes and/or Nicholson teaches or suggests each and every element in any of claim 7 – 13, Applicant respectfully submits that the rejections of claims 7 – 13 under 35 U.S.C. §103 are improper and should be withdrawn. Reconsideration is respectfully requested.

In response to Applicant's Arguments, the Examiner erroneously asserted that Figure 8 of Peltola discloses a structure that corresponds to the structure shown in Figure 2 of the present application. In Peltola the Figure 8 is a sectional Figure, which shows only orifices that are situated in the sectional plane. The nozzle may include orifices also in other directions, but they are not shown in the simplified sectional Figure 8. Nowhere in Peltola is mentioned that the orifices are arranged to form a single uniform jet having flat curtain like shape, but on the contrary for instance in Figure 7 it is shown that orifices are directed upwards, down wards and sideward. Thus, there is no teaching in Peltola to form the same water jet as claimed in the present application. In the present application, the referred structure shown sectional in Figure 2 is shown also in Figure 4 from the direction B, which is from the front. This is mentioned in chapter [0018] of the present application. As it is clearly shown in Figure 4, orifices of the nozzle are arranged to pass only via the same imaginary plane.

CONCLUSION

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such action is hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below. The Examiner is invited and encouraged to telephone the undersigned with any concerns in furtherance of the prosecution of the present application.

Please charge any deficiency as well as any other fee(s) which may become due at any time during the pendency of this application, or credit any overpayment of such fee(s) to Deposit Account No. 50-2896. Also, in the even any extensions of time for responding are required for the pending application(s), please treat this paper as a petition to extend the time as required and charge Deposit Account No. 50-2896 therefore.

Respectfully submitted,

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